CLAIMS:

1. A synchronous burst mode power supply comprising:

a power converter (2) for transforming an AC mains from a relatively low frequency to a higher frequency; and

a gate circuit (1) responsive to said AC mains supply for enabling said power converter (2) to initiate a burst of output pulses at said higher frequency each time said AC mains supply occurs within a predetermined range.

2. The power supply according to claim 1, further comprising means (3) for regulating a transformed output (V3) from said converter circuit (2) to a standby voltage (Vout), said means (3) being coupled back to said gate circuit (1) for controlling operation of said power converter circuit (2) in response to load changes to said power supply.

3. The power supply according to claim 1, wherein said power converter (2) comprises a self-oscillating circuit (Block 2) and said gate circuit (Block 1) enables operation of said self-oscillating circuit only during two periods of each cycle of said supply (V1) from said AC mains when said supply (V1) has a single voltage polarity.

4. The power supply according to claim 1, wherein said gate circuit comprises a threshold detector circuit (22) for generating voltage pulses (V2) when detecting portions of positive waveforms (V1) of said mains voltage within said predetermined range.

5. The power supply according to claim 4, wherein said threshold detector (22) comprises a transistor (Q1) biased at its base terminal by a first voltage division (R1, R2) of said positive waveforms (V1) to pass said voltage pulses (V2) from a second voltage division of said positive waveforms (V1).

6. The power supply circuit of Claim 5, wherein said first voltage division comprises a resistor pair (R1, R3) divider coupled to a base terminal B of said transistor (Q1), and said second voltage division comprises a resistor pair (R4, R5) coupled to said positive waveforms (V1) and an emitter terminal of said transistor (Q1).

7. The power supply circuit of Claim 4, wherein said power converter circuit (2) comprises a free running oscillator circuit (23) for converting said voltage pulses (V2) from said gate circuit (1) at a first frequency to current pulses (ITr) at a second frequency greater than said first frequency.

8. The power supply circuit of Claim 7, wherein said free running oscillator circuit (23) comprises a transistor (Q2) biased at its base terminal B by said voltage pulses (V2) that are rectified by a first diode and then charge a first capacitor (C3) for enabling said second transistor (Q2) to conduct said current pulses (ITr), said current pulses (ITr) being derived from said positive waveforms (V1) ripple attenuated by a second capacitor (C4) coupled to an emitter terminal of said second transistor (Q2), said positive waveforms (V1) energizing a primary winding (n1) of a transformer (TR1) to develop in a flyback manner a secondary winding voltage (VTR1) across a secondary winding (n2) of said transformer (TR1).

9. The power supply circuit of Claim 7, further comprising a voltage regulating circuit (24) coupled to a secondary winding (n2) of a transformer (TR1) having a primary winding (n1) coupled to said free running oscillator circuit (2), said secondary winding (n2) developing a secondary voltage (VTR1) from said current pulses (ITr) conducted through a primary winding (n1) of said transformer (TR1).

10. The power supply circuit of Claim 9, wherein said voltage regulating circuit (24) comprises an integrated voltage regulator (IC1) coupled to a diode D6 and a first capacitor (C5) arrangement for rectifying and filtering said current pulses (ITr) from said secondary winding (n2) to provide a secondary voltage (V3) stabilized by said integrated voltage regulator (IC1), said secondary voltage being filtered by a second capacitor (C6) to provide a standby voltage (Vout).

11. The power supply circuit of Claim 7, further comprising a voltage regulating circuit (244) coupled to a secondary winding (n2) of a transformer (TR1) having a primary winding (n1) through which said current pulses (ITr) controllably conduct to develop a secondary winding voltage (VTR1) that is coupled back to and adjust on-time operation of said threshold detector circuit (222).

12. A synchronous burst mode standby power supply comprising:

a self-oscillating power converter for receiving an AC mains supply;

a transformer primary winding coupled to said power converter and receiving pulses therefrom for generating a supply of power at a secondary winding of said transformer; and

a gate circuit coupled to said AC mains supply and said power converter, wherein said gate circuit enables operation of said self-oscillating power converter while said AC mains supply cycles through a predetermined range.

13. The power supply circuit of claim 12, wherein said gate circuit comprises a threshold detector (22) for generating voltage pulses (V2) when detecting positive waveforms (V1) of said mains voltage below a threshold.

14. The power supply circuit of Claim 13, wherein said threshold detector (22) comprises a transistor (Q1) biased at its base terminal by a first voltage division (R1, R2) of said positive waveforms (V1) to pass said voltage pulses (V2) from a second voltage division and filtering of said positive waveforms (V1).

15. The power supply circuit of Claim 14, wherein said first voltage division comprises a first resistor pair (R1, R3) divider coupled to a base terminal B of said transistor (Q1), and said second voltage division comprises a second resistor pair (R4, R5) coupled between said positive waveforms (V1) and an emitter terminal of said transistor (Q1).

16. The power supply circuit of Claim 2, wherein said self-oscillating power converter circuit converts said voltage pulses (V2) at a first frequency to current pulses (ITr) at a second frequency greater than said first frequency.

17. The power supply circuit of Claim 16, further comprising a voltage regulating circuit (244) coupled to a secondary winding (n2) of a transformer (TR1) having a primary winding (n1) through which said current pulses (ITr) controllably conduct to develop a secondary winding voltage (VTR1) that is coupled back to said threshold detector (222) for influencing on-time operation of said self-oscillating power converter.

18. The power supply circuit of Claim 17, wherein said voltage regulating circuit (244) comprises an integrated voltage regulator (IC1), coupled to a diode D6 and capacitor (C5) arrangement, for receiving said secondary winding voltage (VTR1) and providing a voltage input (V3) for said integrated voltage regulator (IC1), and an opto-coupler (IC2) coupled to said integrated voltage regulator (IC1) for conducting current derived from said secondary winding voltage (VTR1) back to said threshold detector (222) when said voltage input (V3) is above a reference voltage.